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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,561	02/13/2002	Bryan Franz Dufner	C-2199Re	3207
M P Williams 210 Main Street Manchester, CT 06040			EXAMINER ZHENG, LOIS L	
			ART UNIT 1793	PAPER NUMBER
			MAIL DATE 03/24/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/075,561

**Applicant(s)**

DUFNER ET AL.

**Examiner**

LOIS ZHENG

**Art Unit**

1793

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 and 17-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 17-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Status of Claims***

1. No claim amendments are made in view of applicant's response filed 1 February 2008. Claim 22 is canceled in view of applicant's response. Therefore, claims 1-14 and 17-19 are currently under examination.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-2, 8-9 and 13-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Taniguchi et al. US 6,083,638(Taniguchi).

The teachings of Taniguchi were discussed in paragraph 4 of the previous Non-Final Office Action mailed 15 October 2007. The rejection of the instant claims is maintained for the same reasons as stated in the previous Office Action.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3-7 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taniguchi et al. US 6,083,638(Taniguchi) in view of Lindstrom US 4,647,359 (Lindstrom).

The teachings of Taniguchi in view of Lindstrom were discussed in paragraph 6 of the previous Non-Final Office Action mailed 15 October 2007. The rejection of the instant claims is maintained for the same reasons as stated in the previous Office Action.

6. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taniguchi et al. US 6,083,638(Taniguchi) in view of applicant's admitted prior art.

The teachings of Taniguchi in view of applicant's admitted prior art were discussed in paragraph 7 of the previous Non-Final Office Action mailed 15 October 2007. The rejection of the instant claims is maintained for the same reasons as stated in the previous Office Action.

### ***Response to Arguments***

7. Applicant's arguments filed 1 February 2008 have been fully considered but they are not persuasive.

In the remarks, applicant argues that Taniguchi does not teach the claimed increased capacitance and claimed increased capacitance is not inherent in the cell of Taniguchi.

As set forth in paragraph 8 of previous Non-Final Office Action mailed 15 October 2007, Taniguchi teaches an electrochemical cell that is structurally the same as the claimed electrochemical cell. More specifically, Taniguchi teaches an apparatus that

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has the same hydrophilic/hydrophobic material containing bilayer as the instantly claimed apparatus. It is well settled that "While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. >In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997). See MPEP 2114[R-1]. Therefore, since the hydrophilic/hydrophobic bilayer as taught by Taniguchi has the same structure as the claimed bilayer, the apparatus of Taniguchi anticipates the claimed apparatus and that the apparatus of Taniguchi is capable of achieving increasing capacitance as claimed.

Applicant additionally argues that Taniguchi does not teach the claimed hydrophilic/hydrophobic bilayer supported **ON** a separate substrate layer. Applicant further argues that the meaning of the claims should be determined by the applicant.

The examiner does not consider applicant's argument convincing. The supplemental response filed on 11 October 2007 points out that the instant specification recites at several sections that the bilayer is transferred or depositing onto a planar surface of the substrate layer and the substrate layer is adjacent to the bilayer. Taniguchi teaches applying a mixture of hydrophilic and hydrophobic material to both surfaces of the current collector(i.e. porous substrate layer)(col. 7 lines 17-28). Therefore, the porous substrate layer as taught by Taniguchi is adjacent to the bilayer and Taniguchi teaches the same process of transferring hydrophobic/hydrophilic bilayer onto the porous substrate as described by the instant specification. Therefore, the examiner's interpretation of the substrate is consistent with the instant specification.

Applicant further argues that Taniguchi does not teach a hydrophilic substrate layer, a hydrophobic bi-layer and a membrane electrode assembly as recited in claim 17, and there is no claimed order among the hydrophilic substrate layer, hydrophobic bi-layer and the membrane electrode assembly in the teachings of Taniguchi.

The examiner does not find applicant's argument persuasive. Taniguchi teaches that the hydrophilic/hydrophobic mixture material is applied onto both surfaces of the porous substrate(col. 7 lines 25-30). Therefore, there is a layer of hydrophilic/hydrophobic bi-layer material between the porous substrate and the membrane electrode assembly as claimed. Taniguchi further teaches that the porous substrate is impregnated with solution containing hydrophilic resin(col. 7 lines 18-21). Therefore, the porous substrate of Taniguchi would contain more hydrophilic material in addition to the hydrophilic material from the hydrophilic/hydrophobic bi-layer, which meets the limitation of a hydrophilic substrate layer as claimed.

Applicant further argues that Taniguchi's solid coolant plate and solid reactant flow field plate do not read on the claimed water transport plate since they are not porous.

However, the examiner does not find applicant's argument persuasive since the rejection of the porous water transport plate is based on the combination of Taniguchi and applicant's admitted prior art teach of using porous water transport plate. The applicant is reminded that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. In re Keller,

642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., Inc., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). See MPEP 2145 (IV).

Lastly, applicant argues that the examiner took Official Notice regarding the claimed porosity without providing evidence.

The examiner does not find applicant's argument persuasive since the rejection of the claimed porosity is based on routine optimization of a result effective variable. See MPEP 2144.05. The examiner did not take Official Notice in this rejection. Taniguchi teaches both the substrate and the hydrophilic/hydrophobic bi-layer are porous and they provide passages for gases and water. Therefore, porosity of the porous substrate directly relates to how water electrolyte can be effectively transported to the membrane electrode assembly for reaction and how gas product can be transported to from the membrane electrode assembly, which in turn directly affects the operation and efficiency of the fuel cell. The examiner determines, from the teaching of Taniguchi that the porosity of the porous substrate is an result effective variable and one of ordinary skill in the art would have found it obvious to vary the porosity of the porous substrate in the apparatus of Taniguchi via routine experimentation in order to achieve optimum fuel cell performance.

### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/



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Supervisory Patent Examiner, Art  
Unit 1793

LLZ